

FEB 02 2007

Response dated February 2, 2007  
Appln. No.: 10/753,205 Filed: 01/6/2004  
Reply to Final Office Action of November 2, 2006

**Amendments to the Claims**

1. – 23. (Canceled).

24. (Currently Amended) A system for neural modulation in the treatment of disease, comprising:  
a system enclosure, in mechanical communication with a calvarium;  
a control circuit enclosed within said system enclosure and in electronic communication with an output stage circuit, wherein said control circuit employs a calculation of seizure prediction; and  
a stimulating electrode array, in electronic communication with said output stage circuit, wherein said control circuit is configured to monitor an impedance of the stimulating electrode array.

25. (Previously Presented) The system of claim 24 comprising one or more sensors in communication with the control circuit, wherein the one or more sensors are configured to measure one or more signals from a nervous system component of a patient.

26. (Previously Presented) The system of claim 25 wherein at least one of the one or more sensors is disposed intracranially.

27. (Previously Presented) The system of claim 24 wherein said stimulating electrode array is configured to deliver stimulation to a vagus nerve of a patient.

28. (Canceled).

29. (Currently Amended) ~~The system of claim 24~~ A system for neural modulation in the treatment of disease, comprising:  
a system enclosure, in mechanical communication with a calvarium;

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a control circuit enclosed within said system enclosure and in electronic communication with an output stage circuit, wherein said control circuit employs a calculation of seizure prediction, and wherein said control circuit comprises a non-linear control law to generate a control law output signal that specifies parameters of a neuromodulation signal that is delivered by the output stage circuit, and  
a stimulating electrode array, in electronic communication with said output stage circuit.

30. (Previously Presented) The system as recited in claim 24, wherein said control circuit employs a calculation of a measure of chaos.

31. (Previously Presented) The system as recited in claim 24, wherein said control circuit employs a calculation of entropy.

32. (Previously Presented) The system as recited in claim 24, wherein said control circuit employs a calculation of a Lyapunov exponent.

33. (Previously Presented) The system as recited in claim 24, wherein said control circuit employs a calculation of a maximal state control.

34. (Currently Amended) A system for neural modulation of a patient for the treatment of epilepsy, the system comprising:

a signal processor configured to process one or more signals received from a patient;  
an output assembly in communication with the signal processor, the output assembly being configured to analyze the processed one or more signals for seizure prediction, wherein the output assembly calculates and generates a neural modulation signal when a seizure is predicted;  
and

one or more electrodes that are in communication with the output assembly, the one or more electrodes configured to deliver the neural modulation signal to the patient,

wherein the one or more signals comprise EEG signals, and wherein the seizure prediction employs analyzing spike parameters of the EEG signals.

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35. (Previously Presented) The system of claim 34 further comprising a system enclosure that is configured to be coupled with a calvarium.

36. (Currently Amended) The system of claim 34 wherein the output assembly comprises:  
a control circuit that is configured to analyze the processed one or more signals to calculate parameters of the neural modulation signal and generate an output signal; and  
an output stage circuit that receives the output signal from the control circuit and generates the neural ~~modulation~~ modulation signal with parameters that are specified by the output signal.

37. (Previously Presented) The system of claim 34 wherein seizure prediction employs a calculation of entropy.

38. (Previously Presented) The system of claim 34 wherein seizure prediction employs a calculation of chaos.

39. (Canceled).

40. (Currently Amended) The system of claim 39 34 wherein the spike parameters comprise at least one of peak-to-valley times, valley-to-peak times, positive phase amplitudes, and negative phase amplitudes.

41. (Previously Presented) The system of claim 34 wherein the one or more electrodes deliver the neural modulation signal directly to a vagus nerve.

42. (Canceled).